

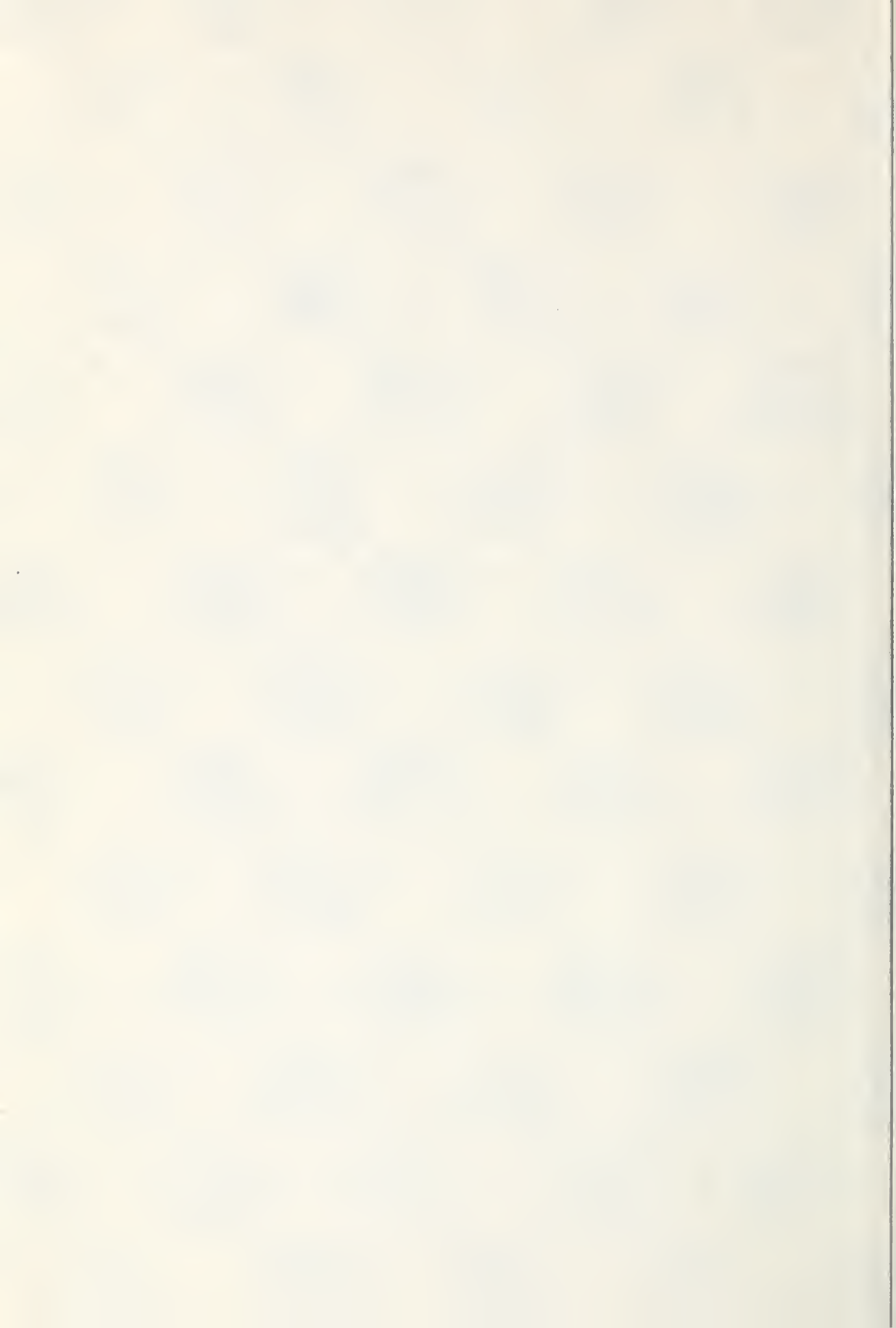
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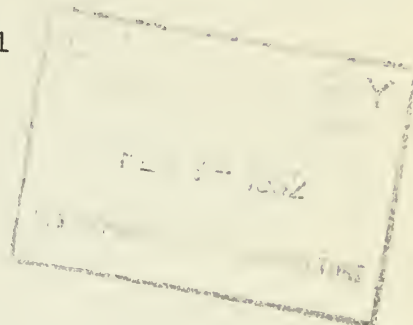




X LIST OF PUBLICATIONS AND PATENTS WITH ABSTRACTS, 1

Western Regional Research Laboratory
Albany 6, California

JANUARY 1 TO JUNE 30, 1951



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Publications with AIC preceding their numbers (for example AIC-283) are mimeographed, and supplies are maintained for free distribution. A limited number of reprints of journal articles are available, usually for a short period following publication. The asterisk (*) before a title indicates that the supply of reprints of that publication was exhausted at the time this list was prepared. Photostat copies can be purchased at nominal cost through the Library of the United States Department of Agriculture, Washington 25, D.C. Copies of patents must be purchased from the United States Patent Office, Washington, D.C., for 25 cents each.

Lists of publications of the Western Regional Research Laboratory for earlier years are available on request.

Bureau of Agricultural and Industrial Chemistry
Agricultural Research Administration
UNITED STATES DEPARTMENT OF AGRICULTURE

ALFALFA

FORMATION OF STEREOISOMERS OF BETA-CAROTENE IN ALFALFA. C. R. Thompson, E. M. Bickoff, and W. D. Maclay, Indus. and Engin. Chem. 43(1):126-129, Jan., 1951. Effect of commercial dehydration on formation of stereoisomers of beta-carotene was studied. Influence of factors concerned in drying and storage such as heat, light, presence of moisture or addition of antibiotics was evaluated.

PHENOLIC ANTIOXIDANTS IN CAROTENE. E. M. Bickoff, Jour. Amer. Oil Chem. Soc. 28(2):65-68, Feb., 1951. Comparative carotene-stabilization data for several phenolic-type antioxidants in mineral oil were obtained. Alkylation of the compounds in general enhanced antioxidant activity, although hydroquinone was an exception. Several antioxidants accepted for use in lard were found effective, and also certain bis-phenols used as anthelmintics.

A PROPOSED MODIFICATION OF THE A.O.A.C. METHOD FOR CAROTENE IN ALFALFA. C. R. Thompson and E. M. Bickoff, Jour. Assoc. Offic. Agr. Chem. 34(1):219-224, Feb., 1951. The currently used A.O.A.C. method for determination of carotene in alfalfa meal was compared with a proposed modification of the method. The proposed method avoids real and potential sources of errors found in the present procedure and requires less equipment and manipulation.

SPECTROPHOTOMETRIC DETERMINATION OF BETA-CAROTENE STEREOISOMERS IN ALFALFA. F. Stitt, E. M. Bickoff, G. F. Bailey, C. R. Thompson, and S. Friedlander, Jour. Assoc. Offic. Agr. Chem. 34(2):460-471, May, 1951. A spectrophotometric method of analysis for three beta-carotene isomers of alfalfa has been developed. Results are in good agreement with those obtained with a recently developed chromatographic procedure for determination of relative amounts of these isomers.

CONCENTRATES AND MEALS OF ALFALFA. G. H. Brother, C. W. Murray, and F. P. Griffiths, U.S. Dept. Agr. Yearbook, 1950-51, pages 345-48. The authors review extensive studies, completed or under way, on methods of making alfalfa and its components more useful, particularly in feeds. Special attention is given to preservation of carotene in dried alfalfa meal.

ANALYTICAL

(Other analytical papers concerned with specific subjects are listed elsewhere.)

KJELDAHL MICRODIGESTIONS IN SEALED TUBES AT 470°C. L. M. White and M. C. Long, Analyt. Chem. 23(2):363-365, Feb., 1951. Kjeldahl digestions for microdetermination of heterocyclic nitrogen were carried out in heavy-walled, sealed glass tubes at 470°C. with concentrated sulfuric acid and mercuric oxide catalyst. Accuracy, precision, and time were favorable.

DETERMINATION OF WATER IN SOME DEHYDRATED FOODS. B. Makower, Agricultural Engineering 32(2):105, Feb., 1951. A summary of an article with same title in Advances in Chemistry Series 3, 37-54, 1950, abstracted in previous list.

PAPER CHROMATOGRAPHY OF ORGANIC ACIDS. J. B. Stark, A. E. Goodban, and H. S. Owens, Analyt. Chem. 23(3):412-413, March, 1951. In a study of identification of organic acids by paper chromatography, effects of hydration of paper, water content of solvents, temperature of development, and presence of inorganic acids on R_f values were estimated. R_f values were measured for 18 organic acids in various developing solvents.

OBSERVATION OF COLOR CHANGES IN SOME PROCESSED AND STORED FOODS. E. J. Eastmond, J. E. Peterson, and R. R. Stumpf, Food Technol. 5(3):121-28, March, 1951.

Reflectance spectrophotometry and photoelectric colorimetry have been used to measure retention of natural color in foods during processing and storage. Objective observations have been made on color changes of visual significance in frozen corn, dehydrated carrots, fresh and frozen peas.

HISTOCHEMICAL TESTS FOR POLYPHENOLS IN PLANT TISSUES. R. M. Reeve, Stain Technol. 26(2):91-96, April, 1951. A satisfactory histochemical test for polyphenols in fresh plant tissues is described. The test is based upon a colorimetric method for phenolics using a nitrous acid reaction.

A SIMPLE TECHNIQUE FOR IDENTIFICATION OF RAFFINOSE AND SUCROSE BY ENZYMATIC HYDROLYSIS ON PAPER CHROMATOGRAMS AND SUBSEQUENT SEPARATION OF THE HYDROLYZED PRODUCTS BY PAPER CHROMATOGRAPHY. K. T. Williams and L. Bevenuto, Science 113 (2942):582, May, 1951. A simple technique was developed for verification of the presence of raffinose and sucrose in plant materials as determined by paper chromatography. The original sugar spots on the chromatogram were treated with superimposed spots of invertase solution prior to placing the chromatograms in the partitioning solvent. Hydrolysis was complete in 5 minutes.

ANTIBIOTICS

LANTHIONINE IN SUBTILIN. G. Alderton and H. L. Fevold, Jour. Amer. Chem. Soc. 73(1):463-64, Jan., 1951. Meso-lanthionine was isolated from acid-hydrolyzed subtilin and identified by means of x-ray diffraction patterns with meso-lanthionine isolated from alkali-treated hair.

ANTAGONISTIC EFFECT OF SERUM ON THE BACTERIOSTATIC ACTION OF LUPULONE. L. E. Sacks and E. M. Humphreys, Proc. Soc. Expt. Biol. and Med. 76(2):234-38, Feb., 1951. Evidence is presented indicating that antagonistic effect of serum on bacteriostatic action of lupulone is due, at least in part, to its phosphatide content.

PROBLEMS IN THE APPLICATION OF ANTIBIOTICS TO FOOD PROCESSING. H. S. Olcott, National Canners Association Information Letter No. 1325, page 102, Feb. 28, 1951. Status of work at the Western Regional Research Laboratory on subtilin is surveyed, including observations on its effectiveness or mode of action on spores, etc. Properties of an ideal food antibiotic are outlined.

THE HYDROGENATION OF LUPULONE AND HUMULONE. J. F. Carson, Jour. Amer. Chem. Soc. 73(4):1850-51, April, 1951. In the presence of platinum oxide or of palladium on charcoal lupulone is catalytically hydrogenated to the crystalline hexahydrolupulone. This compound has the same ring structure as lupulone and differs only in that the three exocyclic olefinic double bonds are saturated. Hexahydrolupulone is more stable than lupulone, is 6 to 8 times as active bacteriostatically to Strep. faecalis and to Staph. aureus, is equally as active in vitro against Mycobacterium tuberculosis H37 Rv but is inactive to mouse tuberculosis. Under the same conditions of hydrogenation, humulone does not yield the corresponding tetra-hydrohumulone but complex mixtures.

THE SYNTHESIS AND ABSORPTION SPECTRA OF SOME ANALOGS OF HUMULONE. T. W. Campbell and G. M. Coppinger, Jour. Amer. Chem. Soc. 73(4):1849-50, April, 1951. Two compounds having the essential structural features assigned to humulone have been synthesized and examined spectrophotometrically. The ultra-violet spectra under various conditions of pH are the same; hence additional confirmation of the structure of humulone is afforded.

FERMENTOR FOR SUBMERGED CULTURES. Patent No. 2,542,031 to H. Humfeld, E. Aeschlimann, and J. R. Hoffman, Feb. 20, 1951. A device useful for carrying out microbiological cultures under aerated and submerged conditions. Novel features include a rotating vaned disc as a foam breaker and means for drawing air into the system and thoroughly dispersing the air through the culture.

SUBTILIN-PECTIN DERIVATIVE. Patent No. 2,555,364 to H. S. Owens and W. D. MacLay, June 5, 1951. Subtilin is combined with pectin to produce a complex which exhibits the biological activity of subtilin and has greatly enhanced solubility in water and biological sera.

FOODS--GENERAL SUBJECTS

FLASH HEAT. NOW FLUIDS CAN BE STERILIZED AND COOLED IN A SPLIT SECOND. A. H. Brown, M. E. Lazar, T. Wasserman, and W. D. Ramage, Food Packer 32(1):20-21; 32(2):34-35, Jan.-Feb., 1951. The steam injection heater and combination evaporator described are under study at this Laboratory as processing devices. Tests made to date indicate that the devices are highly flexible and useful processing tools, especially in the food industries.

MINOR OIL-PRODUCING CROPS OF THE UNITED STATES. E. B. Kester, Economic Botany 5(1):38-59, Jan.-Mar., 1951. A reprinting with minor changes of an article that appeared in Jour. Amer. Oil Chem. Soc. 26(2):65-83, Feb., 1949.

PREPARATION AND PROPERTIES OF SOME ALLYLIC PEROXIDES. T. W. Campbell and G. M. Coppinger, Jour. Amer. Chem. Soc. 73(4):1788-89, April, 1951. Allyl-t-butylperoxide and cyclohexenyl-t-butylperoxide have been synthesized. Their thermal decomposition yields t-butanol and the appropriate unsaturated carbonyl compound in good overall yield. Attempts to prepare benzyl-t-butylperoxide resulted in the production of aromatic aldehydes in fair yield.

KINETICS OF THE REACTION BETWEEN POTASSIUM t-BUTYLPEROXIDE AND ORGANIC HALIDES. G. M. Coppinger and T. W. Campbell, Jour. Amer. Chem. Soc. 73(4):1789-91, April, 1951. The kinetics of the reaction between three organic halides and potassium t-butylperoxide has been studied at 30° and 50°C. in methanol solution. The reaction was found to be second-order, with an energy of activation of 21-23 K Cal/mole.

OXYGEN ABSORPTION APPARATUS FOR MEASURING INDUCTION PERIODS OF FATS. I. R. Hunter, Jour. Amer. Oil Chem. Soc. 28(4):160-61, April, 1951. An apparatus for automatic determination of induction period of fats and oils makes use of a modified glass syringe, which responds to a contraction in volume in a reaction vessel and opens an electric circuit after a predetermined amount of absorption of oxygen has occurred. The unit is sufficiently compact so that several can be operated in a single constant-temperature bath.

*PROCESSING HEAT-SENSITIVE LIQUIDS BY STEAM INJECTION. A. H. Brown, M. E. Lazar, T. Wasserman, G. S. Smith, and M. W. Cole. Conference on citrus processing, U.S. Citrus Products Station, Winter Haven, Fla., May 9, 1951, mimeographed, pp. 8-9. (Report on steam injection heating. See first abstract of this section.)

THE SPECTROPHOTOMETRIC EXAMINATION OF SOME DERIVATIVES OF PYROGALLOL AND PHLOROGLUCINOL. T. W. Campbell and G. M. Coppinger, Jour. Amer. Chem. Soc. 73(6):2708-12, June, 1951. The acylation of pyrogallol can be conveniently carried out with boron fluoride as catalyst. The spectra of a series of acyl- and alkyl-pyrogallols have been obtained under various conditions of pH.

DRYING OF FRUIT OR VEGETABLE MATERIALS. Patent No. 2,557,155 to S. I. Strashun. June 19, 1951. A fatty acid ester of a polyhydric alcohol, glyceryl mono-stearate, for example, is incorporated in a fruit or vegetable juice prior to spray drying in order to reduce the hygroscopicity of the dried product.

FOOD OR FEED IN A PERIOD OF CHANGE. W. D. Ramage, U.S. Dept. Agr. Yearbook, 1950-51, pages 95-105. The author discusses the implications and extent of such recent changes as improvement in food habits, increase in processing of foods, and development of new feeding methods and utilization of wastes. Tabulations include production of food and feed crops, feed grains and concentrates, food consumption, and animals and animal products in the United States, and animal products in various parts of the world.

BASIC METHODS OF PROCESSING FOOD. J. R. Matchett, U.S. Dept. Agr. Yearbook, pages 111-14, 1950-51. Principles involved in canning, freezing, and dehydration of foods are reviewed.

THE TOOLS THE PHYSICIST USES. C. H. Kunsman, U.S. Dept. Agr. Yearbook, 1950-51, pages 25-34. Physics solves many scientific agricultural problems and becomes increasingly useful as new applications are investigated. The author reviews applications of such methods as spectrophotometry, microscopy, X-ray diffraction, electronics, ultrasonics, and radioactivity.

PRODUCTION OF MUSHROOM MYCELIUM. H. Humfeld, U.S. Dept. Agr. Yearbook, 1950-51, pages 242-45. Recent research has revealed that the mycelium of certain strains of commercial mushroom grows in controlled liquid media. The product is a cream-like mushroom substance that may have commercial uses.

SOME OF THE MINOR OIL CROPS. E. B. Kester, U.S. Dept. Agr. Yearbook, 1950-51, pages 592-98. Oils obtainable in minor amounts from a wide variety of crops are described and their uses are discussed.

MAKING USE OF TONS OF CITRUS WASTE. H. S. Owens, M. K. Veldhuis, and W. D. MacLay, U.S. Dept. Agr. Yearbook, 1950-51, pages 268-73. More than 2 million tons of pulp, peel, and rag constitute the waste discussed and this amount is increasing as processing increases. Feeds from dried matter, yeast from fermentation of modified liquors, various oils, citric acid, pectin, and low-methoxyl pectin are major by-products discussed.

FRUITS

NEW MOISTURE TEST GIVES FASTER RESULTS. E. F. Potter, Food Indus. 23(1):85, 190, Jan., 1951. By use of a suitable desiccant, laboratory workers can obtain a measurement of moisture content of concentrated fruit products within a comparatively short time. For comparable accuracy an oven method requiring about two days would be necessary.

PREVENTION OF THE GROWTH OF SUCROSE HYDRATES IN SUCROSE SIRUPS. F. E. Young, F. T. Jones, and H. J. Lewis, Food Res. 16(1):20-29, Jan.-Feb., 1951. Growth of sucrose hydrate in sucrose sirups was repressed by storage at -30°F .; it was also repressed at -10°F . by replacement of a portion of the sucrose by corn sirup, invert sugar, maltose, or levulose. Frequent spontaneous crystallization of dextrose would prevent its use as a sucrose hydrate inhibitor.

COMPOSITION OF RED RASPBERRIES, INCLUDING PECTIN CHARACTERIZATION. L. R. Leinbach, C. G. Seegmiller, and J. S. Wilbur, Food Technol. 5(2):51-54, Feb., 1951. A study of chemical composition of several varieties of red raspberries grown in the Northwest revealed no direct relationship between chemical composition and canning properties.

EXPERIMENTAL FALLING FILM EVAPORATOR FOR PREPARATION OF JUICE AND PUREE CONCENTRATES AT LOW TEMPERATURE. L. H. Walker and D. C. Patterson, Indus. and Engin. Chem. 43(2):534-36, Feb., 1951. A design is presented for an all-glass evaporating unit in which products of evaporation are retained in the system. Information is included concerning details of construction, method of operation, capacity, and range of temperatures of concentration.

PREPARATION OF FROZEN APPLE JUICE CONCENTRATE. L. H. Walker, C. C. Nimmo, and D. C. Patterson, Food Technol. 5(4):148-51, April, 1951. Three methods for preparation of full-flavored apple juice concentrate are presented and the products compared organoleptically. Data indicate that concentration can be carried out in relatively low-cost vacuum pans without affecting flavor of product.

HEAT INACTIVATION OF POLYPHENOLASE IN FRUIT PUREES. K. P. Dimick, J. D. Ponting, and B. Makower, Food Technol. 5(6):237-41, June, 1951. Thermal-inactivation characteristics of polyphenolase were investigated in purees of apples, apricots, peaches, pears, and grapes, to determine conditions for heat treatments required for prevention of enzymatic browning. Inactivation was measured as a function of time, temperature, and pH in a continuous-flow apparatus which allowed a part of the reaction to be studied under isothermal conditions.

SUCROSE POLYHYDRATE GLAZING OF FRUIT. Patent No. 2,542,068 to F. E. Young and F. T. Jones, Feb. 20, 1951. Fruit is coated with a suspension of sucrose polyhydrate crystals in sucrose sirup, then frozen. The frozen coating consists mostly of sucrose polyhydrate which is hard and so protects the fruit during storage and handling.

PRODUCTION AND FOOD USES OF FRUIT. R. R. Legault and C. L. Rasmussen, U.S. Dept. Agr. Yearbook, 1950-51, pages 247-50. United States and world production of fruits are described. Chemical composition, nutritive values, and processing problems of fruits are reviewed briefly.

PRESERVATION OF FRUITS BY FREEZING. W. Rabak, U.S. Dept. Agr. Yearbook, 1950-51, pages 277-80. The history of technological developments that have advanced the commercial freezing preservation of foods is outlined by the author.

THE OLDEST WAY TO STORE FRUIT. W. Rabak, U.S. Dept. Agr. Yearbook, 1950-51, pages 275-76. A review of technology of dehydration of fruits and of newer developments such as vacuum drying, freeze drying, and dehydrofreezing.

PECTIN

DERIVATIVES OF D-GALACTURONIC ACID-1-PHOSPHATE. E. L. Pippen and R. M. McCready, Jour. Org. Chem. 16(2):262-68, Feb., 1951. Three new crystalline derivatives of alpha-D-galacturonic acid and two amorphous products are described.

POLYVALENT METAL PECTINATE FILMS AND PROCESS OF PRODUCING SAME. Patent No. 2,542,052 to H. S. Owens and T. H. Schultz, Feb. 20, 1951. A solution of a pectinate is extruded through a nozzle having a rectangular orifice into a bath of a polyvalent metal salt such as zinc chloride or calcium chloride to produce a water-insoluble pectinate film. The film is useful for packaging purposes.

EXTRACTION OF CITRUS PEEL. Patent No. 2,548,895 to R. P. Graham and A. D. Shepherd, April 17, 1951. Pectin is extracted from citrus peel by a continuous process which involves moving the sliced peel through a trough counter-current to a stream of dilute acid.

METHOD FOR OBTAINING PECTINIC ACIDS OF LOW METHYL ESTER CONTENT IN CONCENTRATED FORM. Patent No. 2,550,705 to W. D. Maclay, A. D. Shepherd, R. M. McCready, and R. P. Graham, May 1, 1951. Low-methoxyl pectins are prepared from dilute aqueous solutions of pectin by adding a polyvalent metal salt to the solution, separating the precipitated pectin-polyvalent metal complex, and subjecting it to partial de-methoxylation by the use of an acid or alkaline medium.

POULTRY

APPLICATION OF BALANCED INCOMPLETE BLOCK DESIGN TO SCORING OF TEN DRIED EGG SAMPLES. H. L. Hanson, L. Kline, and H. Lineweaver, Food Technol. 5(1):9-13, Jan., 1951. A report of application of the "balanced incomplete block design" in organoleptic testing of ten samples of egg. The samples were set up in 15 combinations or sets of 4 samples each. Each set was tasted once, each sample 6 times, and each pair of samples appeared together twice. Results were consistent within the experiment and also with results of independent tests.

THE MOLECULAR WEIGHT OF LYSOZYME AFTER REDUCTION AND ALKYLATION OF THE DISULFIDE BOND. H. Fraenkel-Conrat, A. Mohammad, E. D. Ducay, and D. K. Mecham, Jour. Amer. Chem. Soc. 73(2):625-27, Feb., 1951. When lysozyme is dissolved in 3M urea, its disulfide bonds can rapidly and quantitatively be reduced with thio-glycol, and subsequently alkylated with iodoacetamide. The molecular weight is not decreased by these reactions, thus suggesting that lysozyme consists of a single peptide chain.

ROLE OF GLUCOSE IN THE STORAGE DETERIORATION OF WHOLE EGG POWDER. I. REMOVAL OF GLUCOSE FROM WHOLE EGG MELANGE BY YEAST FERMENTATION BEFORE DRYING. L. Kline and T. T. Sonoda, Food Technol. 5(3):90-94, March, 1951. Describes factors requisite to the preparation of an acceptable glucose-free whole-egg powder prepared by resting-cell yeast fermentation.

ROLE OF GLUCOSE IN THE STORAGE DETERIORATION OF WHOLE EGG POWDER. II. A BROWNING REACTION INVOLVING GLUCOSE AND CEPHALIN IN DRIED WHOLE EGGS. L. Kline, J. E. Gegg, and T. T. Sonoda, Food Technol. 5(5):181-87, May, 1951. Evidence is presented for an amine-aldehyde reaction involving glucose and the phospholipid cephalin, which occurs during the storage of dried whole eggs. Removal of glucose before drying eliminates or greatly retards changes normally occurring in the phospholipid fraction during storage. These include loss in amino groups, browning, and development of fluorescence and ultraviolet absorption.

ROLE OF DIETARY FAT IN THE QUALITY OF FRESH AND FROZEN STORAGE TURKEYS. A. A. Klose, E. P. Mecchi, H. L. Hanson, and H. Lineweaver, Jour. Amer. Oil Chem. Soc. 28(4):162-64, April, 1951. Comparisons of fats of turkeys fed various meals (meat and fish meal), along with various combinations of linseed and coconut oil, indicated that in the absence of fish products in the diet, the feeding of sufficiently unsaturated vegetable oils can cause typical fishy flavors in cooked meat.

ESTIMATION OF MONOCARBONYL COMPOUNDS IN RANCID FOODS. M. F. Pool and A. A. Klose, Jour. Amer. Oil Chem. Soc. 28(5):215-18, May, 1951. A convenient method for determination of monocarbonyl compounds in rancid foods is described. Applicability to aldehydes varying in molecular size and degree of unsaturation has been demonstrated. The method can be used on crude benzene extracts of rancid foods.

THE PRESENCE OF ENTEROCOCCI IN SPRAY-DRIED WHOLE EGG POWDER. M. Soloway and A. J. Watson, Food Research 16(3):187-91, May-June, 1951. Results of a detailed study of 74 isolations made from pin-point colonies are reported. Growth rate and growth acceleration studies were made in liquid egg in an effort to interpret the possible behavior of these organisms during the egg-drying operation.

EXPERIMENTAL HUMAN SALMONELLOSIS. I. PATHOGENICITY OF STRAINS OF SALMONELLA MELEAGRIS AND SALMONELLA ANATUM OBTAINED FROM SPRAY DRIED WHOLE EGG. N. B. McCullough and C. W. Eisele, Jour. Infectious Diseases 88(3):278-89, May-June, 1951. (Work conducted under contract at University of Chicago.) Six strains of Salmonella, originally isolated from spray-dried whole egg powder, were fed to human volunteers and all produced human illness. The minimal infective dose was determined and was found to be within the range that might conceivably be encountered.

EXPERIMENTAL HUMAN SALMONELLOSIS. II. IMMUNITY STUDIES FOLLOWING EXPERIMENTAL ILLNESS WITH SALMONELLA MELEAGRIDIS AND SALMONELLA ANATUM. N. B. McCullough and C. W. Eisele, Jour. Immunology 66(5):595-608, May, 1951. (Work conducted under contract at University of Chicago.) Three strains of S. pullorum derived from spray-dried whole egg and one strain obtained from a human case were fed to human volunteers in graduated dosages. Human illness was produced with all four strains in dosages ranging from 1.3 to 10 billion organisms.

METHOD OF SOLUBILIZING KERATIN. Patent No. 2,542,984 to C. H. Binkley, Feb. 27, 1951. Chicken feathers or other natural keratinous materials are heated with a mixture of water, alcohol, and acid to effect a solubilization of most of the keratin material. The resulting product can be used as a plastic for forming buttons, containers, fibers, and other articles.

QUALITY IN PROCESSED POULTRY. A. A. Klose, H. L. Hanson, and E. H. McNally, U. S. Dept. Agr. Yearbook, 1950-51, pages 633-41. The rapidly growing frozen poultry industry is benefiting by research on better ways to control such factors as desiccation, rancidity, and bacterial contamination. New ways to improve storage life are being sought. Improved methods of freezing, canning, and smoking are summarized.

IMPROVING FROZEN AND DRIED EGG. H. Lineweaver and R. E. Feeney, U.S. Dept. Agr. Yearbook, 1950-51, pages 642-47. Problems in the production of high-quality frozen and dried egg products are reviewed. Recent researches on improvement of the stability of whole-egg powder are discussed.

THE PROBLEM OF BACTERIA IN EGGS. M. Solowey, U. S. Dept. Agr. Yearbook, 1950-51, pages 650-52. A review of studies that have been made to evaluate the importance of Salmonella and other microorganisms in egg products.

FEATHERS AS A SOURCE OF FIBERS. H. P. Lundgren, U.S. Dept. Agr. Yearbook, 1950-51, pages 481-83. During recent years research at the Western Regional Research Laboratory has yielded information on the chemical structure of feathers and on suitability for manufacture into fibers. The fibers resemble hair and have excellent strength when dry. Chief limitation is decline in strength when wet.

UTILIZATION OF POULTRY WASTES. H. P. Lundgren, H. Lineweaver, and E. H. McNally, U.S. Dept. Agr. Yearbook, 1950-51, pages 869-76. Extensive studies that have been made on feathers, waste egg, certain proteins of egg white, offal, viscera, and egg shells are reviewed, along with presently employed methods of utilization of poultry wastes.

RICE

METHOD FOR MEASUREMENT OF LIPASE ACTIVITY IN RICE BRAN. D. F. Houston, R. L. Roberts, and E. B. Kester, Rice Jour. 54(4):29-30, April, 1951. A method is reported for the measurement of lipase activity in rice bran, which consists of titration of acidity developed when an aqueous extract of defatted bran is stirred in contact with a specific water-soluble substrate.

DEVELOPMENT OF FREE FATTY ACIDS DURING STORAGE OF BROWN (HUSKED) RICE. I. R. Hunter, D. F. Houston, and E. B. Kester, Cereal Chem. 28(3):232-39, May, 1951. The percentages of free fatty acid in the oil of brown-rice bran after various periods of storage at varying moisture contents and under various temperatures have been studied. It is evident that rate of formation of free fatty acids in oil or brown rice may be sufficiently decreased by lowering the moisture content or storage temperature of the rice, or both, to permit prolonged storage with only minor deterioration in quality.

FROZEN COOKED RICE. M. M. Boggs, C. E. Sinnott, O. R. Vasak, and E. B. Kester, Food Technol. 5(6):230-32, June, 1951; Rice Jour. 54(9):12, Sept., 1951. Frozen cooked rice was prepared by slowly boiling the rice in a small amount of water for 10 minutes and then steaming for an additional 25 minutes, air cooling, packaging in cellophane, and freezing. Polished Texas Patna and California Pearl rice were used. Tasters found the products fully equal to freshly cooked rice, even after 8 months of storage at 10°F. Estimates of manufacturing costs indicate that a 12-oz. carton can be sold at retail for about 13 to 15 cents.

STABILIZATION OF BROWN RICE. Patent No. 2,538,007 to E. B. Kester, Jan. 16, 1951. Brown rice is extracted with a fat solvent such as hexane to remove part of its oil content. The resulting product is much more resistant to development of rancidity on storage than the original brown rice.

NEWS OF RICE, AN ANCIENT STAPLE. E. B. Kester and J. W. Jones, U. S. Dept. Agr. Yearbook, 1950-51, pages 362-66. A discussion of composition and nutritive values of rice, parboiling, enrichment with B vitamins, old and new forms, rice bran and rice bran oil, and current research on rice.

SUGAR BEETS

COMPOSITION OF SUGAR BEET LIQUORS. EFFECT OF PROCESSING. J. B. Stark, A. E. Goodban, and H. S. Owens, Indus. and Engin. Chem. 43(3):603-605, March, 1951. Samples of diffusion juice, thick juice, and molasses from sugar-beet processing were treated with ion-exchange resins to separate the amino acids and to fractionate organic acids such as citric, oxalate, succinic, and malic. Results are presented.

SUGAR BEET TOP FOOD VALUE SAVED BY MECHANICAL METHODS. R. D. Barmington, L. E. Jenneke, and D. M. Stevens, Colorado A & M News, July, 1951. (Work conducted under contract at Colorado Agricultural & Mechanical College, Fort Collins, Colo.) A report of studies on new methods of harvesting green beet tops in the field for ensiling or dehydration and later use as feed.

VEGETABLES

AIC-287, CONVERGENCE CRITERIA IN NUMERICAL SOLUTION OF THE DIFFUSION EQUATION. W. B. Van Arsdell, June, 1950.

AIC-297, DEHYDRATED MASHED POTATOES--A REVIEW. R. L. Olson and W. O. Harrington, January, 1951. This review is concerned with the general characteristics and methods of production of dehydrated mashed potatoes and their advantages over other forms of dehydrated potato (dice, julienne strips, and riced).

AIC-300, PRINCIPLES OF THE DRYING PROCESS, WITH SPECIAL REFERENCE TO VEGETABLE DEHYDRATION. W. B. Van Arsdel, March, 1951. Subject matter includes properties of air and water vapor, evaporation from a moist solid, drying rates, and drying conditions within a dehydrator.

AIC-303, FACTORS AFFECTING STORAGE STABILITY OF POTATO GRANULES. C. E. Hendel, H. K. Burr, and M. M. Boggs, March, 1951. Deteriorative changes in sulfited potato granules (mashed potato powder) during storage have been studied as functions of moisture content, oxygen content of the package atmosphere, and type of container (permeable vs. impermeable).

A RAPID METHOD FOR DETERMINATION OF OIL IN POTATO CHIPS. K. T. Williams and E. A. McComb, Potato Chipper 10(9):5-6, April, 1951. A method is described for determination of oil in potato chips which employs simple technique and equipment and is sufficiently accurate for research as well as control work. An analysis, including sample preparation and calculations, can be completed in 25 minutes.

AIC-308, TUNNEL-AND-TRUCK DEHYDRATORS, AS USED FOR DEHYDRATING VEGETABLES, W.B. Van Arsdel, May, 1951. The commercially important forms of the tunnel-and-truck type of dehydrator are illustrated and described. Particular emphasis is laid on the two forms most widely used for vegetable dehydration--the counterflow tunnel and the two-stage tunnel. Operating characteristics are illustrated by examples in which effects of design and operating conditions on drying capacity and heat economy are estimated. Possible relationships of the same factors to product quality are pointed out. Closed-cycle dehydration systems and a combination of blanching with drying are considered briefly.

EFFECT OF ENZYME INACTIVATION ON QUALITY RETENTION IN FROZEN BRUSSELS SPROUTS. F. E. Lindquist, W. C. Dietrich, M. P. Masure, and M. M. Boggs, Food Technol. 5(5):198-99, May, 1951. Peroxidase but not catalase activity serves as a satisfactory index for the adequacy of blanching of Brussels sprouts. Samples containing active peroxidase when held at -10°F. for 10 months were found to have a marked off-flavor, decreased natural flavor, and an abnormal pink color at the centers.

COMPARISON OF SCORING RESULTS FOR TWO AND FOUR SAMPLES OF CORN PER TASTE SESSION. A. C. Ward and M. M. Boggs, Food Technol. 5(6):219-20, June, 1951. Four samples of frozen corn that differed only slightly in flavor were scored with two and also with all four samples in single taste sessions. Judges did not consistently show better performance with two than with four samples.

MODIFIED FLOTATION METHOD SPEEDS FROZEN PEA MATURITY GRADING. R. G. Witebsky and H. K. Burr, Food Packer 32(6):36-37, June, 1951. A modification of the Tentative United States Standard method for grading frozen peas is described. Sugar solutions are substituted for the conventional sodium chloride brines and entrapped air is eliminated by evacuation. Data are presented to show that the modified method gives essentially the same results as the present standard method.

ROTARY BLANCHER OR COOKER. Patent No. 2,537,053 to G. T. Hemmeter, Jan. 9, 1951. The device includes a rotor within a closely fitting housing. The rotor is provided with several pockets for receiving material to be blanched and later discharging the blanched material. Means is also provided for automatically introducing steam into the pockets between the time the material is fed into and discharged from the pockets.

OUR SECOND LARGEST FOOD GROUP. F. P. Griffiths, H. S. Olcott, and W. L. Shaw, U. S. Dept. Agr. Yearbook, 1950-51, pages 213-16. A summary of trends in the consumption, handling, and processing of vegetables.

THE PROCESSING OF POTATOES FOR FOOD. F. P. Griffiths, U.S. Dept. Agr. Yearbook, 1950-51, pages 184-87. Processes described are dehydration, prepeeling, and canning. Some of the problems of each method are discussed.

THE MAKING OF POTATO CHIPS. R. C. Wright, M. E. Davis, and C. E. Hendel, U.S. Dept. Agr. Yearbook, 1950-51, pages 788-89. (with Bureau of Plant Industries, Soils and Agricultural Engineering). Problems in selection of potato varieties, storage, and control of color are discussed. The process of manufacture is briefly described.

NINE PRINCIPLES FOR FREEZING VEGETABLES. J. A. Berry and F. E. Lindquist, U.S. Dept. Agr. Yearbook, 1950-51, pages 217-20. The nine principles apply to steps in freezing from selection of raw materials to storage of packed product.

THE ART OF DRYING VEGETABLES. J. A. Berry and F. E. Lindquist, U.S. Dept. Agr. Yearbook, 1950-51, pages 221-26. Dehydration of vegetables, used extensively during World War II, is a comparatively small peace-time industry. Techniques that have improved products and problems remaining are discussed.

WHEAT

SOME EFFECTS OF SOLUBLE FLOUR COMPONENTS ON BAKING BEHAVIOR. J. W. Pence, A. H. Elder, and D. K. Mecham, Cereal Chem. 28(2):94-104, March, 1951. When wheat flour was separated into gluten, starch, and soluble fractions, and doughs were reconstituted from various combinations of these fractions, inclusion of the soluble components consistently increased loaf volume over that obtained with gluten and starch alone.

WHEAT PROTEINS, KNOWN AND UNKNOWN. D. K. Mecham and G. H. Brother, U.S. Dept. Agr. Yearbook, 1950-51, pages 621-27. A review of research that has been done on gluten and other proteins of wheat and a discussion of objectives and problems in current studies.

WOOL

THE FUTURE FOR DOMESTIC WOOL. H. P. Lundgren and K. J. Palmer, U.S. Dept. Agr. Yearbook, 1950-51, pages 489-94. Extensive studies under way in a number of co-operating research laboratories have as their objectives improved methods of processing and possibly modifying wool, in order to improve quality and durability.

